

Work Order ID 78451

January-10-12 9:28:16 AM

\*78451\*

Page 1

Item ID: D206-642-341

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Replacement Skidtube

Start Date: 10/01/2012 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 23/02/2012 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan: M.L.J Date: 12/01/10 Tooling:

Date:

Run Start \*NR1\*

QC: Date: SPC (Y/N):

Date:

Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D2650	F

100

0.00

\*100\*

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels per PPP D206-642-341 CHG003

N/A

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 78451

**\*78451\***

Page 2

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Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Replacement Skidtube

Start Date: 10/01/2012 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 23/02/2012 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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110

**\*110\***

Skidtubes

Skidtubes

Memo

0.00

1-Deburr Fwd edge of tube

*SAD 12-02-02*

2-Remove ridge on inside of Fwd edge of tube as per Dwg D2650

3-Weld Fwd Cap as per Dwg D2650. Use aluminum rod. Grind D2647 to fit as required.

A/RAluminum Rod

*M119785*

*BE 12-02-02*

4-Grind weld flush to cap on top surface only.

5-Cut aft end to length as per dwg D2650

*SAD 12-02-07*

6-Drill pilot holes using drill Jig DT8168A (A,& B) and DT8025. Open to Ø0.312"

7-Drill holes for wearplates using DT 8028-5. Open to Ø 0.297".

8-Open Aft Cap Hole using #6 Drill Bit

*SAD 12-02-07*

9-Open holes for Tow Ring to Ø0.625" as per Dwg D2650, D2650-5 Drilling Detail

10-Remove inner indexing ridge on aft end of skidtube as per Dwg D2650

11-Deburr and Blow out all chips from inside the tube

# Dart Aerospace Ltd

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**\*1\***

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Required Date: 23/02/2012 Req'd Qty: 1.00

**\*1\***

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Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

**\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop

**\*NR2\***

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

115

QC5- Inspect part completeness to step on W/O

0.00

**\*115\***

QC

Memo

0.00

Quality Control

120

Chemical Conversion Coat per QSI005 4.1

0.00

**\*120\***

HandFinish

Memo

0.00

Hand Finishing

125

QC3- Inspect Part Finish

0.00

**\*125\***

QC

Memo

0.00

Quality Control

8 12/02/07

①

①


SAD 12-02-07

12-2-7

12-2-7

PTO

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	
12-27	120	Standard QC7		12-27				

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Page 4

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Item Name: Replacement Skidtube

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**\*1\***

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Required Date: 23/02/2012 Req'd Qty: 1.00

**\*1\***

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Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start **\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop **\*NR2\***

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

130

0.00

**\*130\***

Skidtubes

Skidtubes

Memo

0.00

1-Open holes to finished size as per Dwg D2650, D2650-5 Drilling Detail (without cutting fluid)

2-Countersink crossbolt spacer holes as per Dwg D2650(without cutting fluid)

3-Deburr. Blow out chips. Grind alodine off around crossbolt spacer.

4-Bond D2654-5 web in place as per QSI 015 Ensure holes line up Allow 12 Hrs. cure time before cutting

Start Date: 12/02/07 Time: 1:15

Finish Date: 12/02/08 Time: 1:30

A/R Sikaflex-291 419999

Sikaflex expiry date: 12/08/13

*BB 12/02/07*

*DL 12/02/07*

140

QC5- Inspect part completeness to step on W/O

0.00

**\*140\***

QC

Memo

0.00

Quality Control

*1 8 BE 12-02-08*

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
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Page 5

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Cust Item ID:

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Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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150

0.00

**\*150\***

Skidtubes

Skidtubes

Memo

0.00

Skidtubes

1-Prep per QSI 005 and Insert cross bolt spacers D2649. Weld as per QSI 004 and Dwg D2650. Remember to back drill each hole to 0.25" before welding the other side. Use aluminum rod  
A/RAluminum Rod *M119772 BE 12-02-08*  
*M119785*

2-Grind welds flush as per Dwg D2650. Masking Tape access to inside of the Skidtube *3B 12/02/09*

3-Counterbore 5/16" x 0.750" deep as per Dwg D2650Debur *DP 12-2-9*

4- Install nut plate as per dwg *3B 12/02/09*

170

QC10- Inspect visual per QSI004- ground welds

0.00

**\*170\***

QC

Memo

0.00

Quality Control

*5 12/02/10*

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Page 6

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Cust Item ID:

Required Date: 23/02/2012 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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180 QC5- Inspect part completeness to step on W/O

0.00

**\*180\***

8/17/02/10

QC

Memo

0.00

Quality Control

190 Pressure Wash per QSI005 4.3

0.00

**\*190\***

0.00

HandFinish

Memo

Hand Finishing

Brush alodine tube on crossbolt spacer area, do not acid etch, do not dip tube in tank.

12/02/13

200 White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00

**\*200\***

0.00

Powdercoat

Memo

Powder Coating

START TIME:

OVEN TEMPERATURE:

FINISH TIME:

Prime M 117319

Del Fleet Blue M 118395

Clear Del Fleet M 118093

12-2-14

201 spray paint

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Page 7

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Item Name: Replacement Skidtube

Start Date: 10/01/2012 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 23/02/2012 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals:

Process Plan: \_\_\_\_\_

Date: \_\_\_\_\_

Tooling: \_\_\_\_\_

Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_

Date: \_\_\_\_\_

SPC (Y/N): \_\_\_\_\_

Date: \_\_\_\_\_

Stop **\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

210

QC- Inspect Part Finish

0.00

**\*210\***

QC

0.00

Quality Control

QC4  
Memo

8/26/15

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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220

0.00

**\*220\***

HandFinishing

HandFinish

Memo

0.00

Hand Finishing

1-Install inserts & wearpads as per dwg D2922. Use a drop of Sikaflex inside insert holes before installing wearpad/wearplate.

A/RSikaflex-291 114443

Sikaflex expiry date: 12-10

2-Install O-Rings D2651-3 on plugs D2651-1 with Petroleum Jelly and install plugs as per Dwg D2650. Clean excess adhesive

3-Install MS27039-4-06 Screw

4-Inspect for foreign object per QSI 024

5-Install D2646 Aft Cap and seal with SikaflexClean excess adhesive

A/RSikaflex-291 114443

Sikaflex expiry date: 12-10

6-Wing Work as per Dwg D2650-5 and QSI 005 4.4

Batch: 120125

1 BL 12-2-22

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Page 9

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Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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230 QC3- Inspect Part Finish 0.00

**\*230\***

QC

Memo

0.00

Quality Control

12/02/22 (1)

240 QC5- Inspect part completeness to step on W/O 0.00

**\*240\***

QC

Memo

0.00

Quality Control

12/02/22 (1)

250 Packaging 0.00

**\*250\***

Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPP D206-642-341

Location: \_\_\_\_\_

PPP Rev: \_\_\_\_\_

PP

12/2/23

W/O:		WORK ORDER CHANGES					
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Stop **\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

260

QC21- Final Inspection - Work Order Release

0.00

**\*260\***

QC

Memo

0.00

Quality Control

12/2/23  
MF  
12-02-23

W/O:		WORK ORDER CHANGES					
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January-10-12 9:28:20 AM

**\*78451\***

**\*D206-642-341\***

**Required Date:** 23/02/2012

**Required Qty: 1.00**

**Comments:** IPP Rev: H05.10.11 Added D3429-1 per CHG004KJ/CP/JLM  
IPP Rev: I 08-09-29 revF as per dwg DD verified by: EC Est Rev: J 09-03-02 as per DS19440 rev.a DD verified by: EC IPP rev K 10.08.03 chg ms27039-1-08 for "C" type EC verified by DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
AN960JD416 <del>*AN960JD416*</del> Washer	<del>AS1149D0463J</del>	✓ Purchased	No		118384.		Each	0.0000		1			
									**	1		12-2-22.	
CCR264SS3-3 <del>*CCR264SS3-3*</del> Cherry Rivet		Purchased	No				Each	947.0000		2			
									**	2		12/02/09	
						<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>			
						ST331		947					
						113973		2					
						117849		139					
						119017		806					
CR3212-4-03 <del>*CR3212-4-03*</del> Cherry Rivet		Purchased	No				Each	1,716.000		2			
									**	2		12/02/09	
						<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>			
						FP002		724					
						114859		724					
						ST331		992					
						110139		2					
						119017		990					

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

**Part No:** \_\_\_\_\_ **PAR #:** \_\_\_\_\_ **Fault Category:** \_\_\_\_\_ **NCR: Yes No** **DQA:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
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**NOTE:** Date & initial all entries

# Picklist Print

Page 2

January-10-12 9:28:21 AM

Work Order ID: 78451

**\*78451\***

Parent Item: D206-642-341

**\*D206-642-341\***

Parent Item Name: Replacement Skidtube

Start Date: 10/01/2012

Required Date: 23/02/2012

Start Qty: 1.00

Required Qty: 1.00

D2620

Manufactured No

Each

25.0000

1

**\*D2620\***

Skidtube, 206 Skidtube

**\*\***

SAD 12-02-02

Location

Loc Qty

Loc Code

LG

25

71616

1

71617

6

75587

2

76815

3

76817

10

76819

3

①

D2647

Manufactured No

Each

161.0000

1

**\*D2647\***

Cap

**\*\***

BE12-02-02

Location

Loc Qty

Loc Code

LG002

161

73826

52

75482

109

0

January-10-12 9:28:21 AM

Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



# Picklist Print

January-10-12 9:28:21 AM

Page 3

Work Order ID: 78451

\*78451\*

Parent Item: D206-642-341

\*D206-642-341\*

Parent Item Name: Replacement Skidtube

Start Date: 10/01/2012

Required Date: 23/02/2012

Start Qty: 1.00

Required Qty: 1.00

D2649 Manufactured No Each 637.0000 19

\*D2649\*

Cross Bolt Spacer

\*\*

BE 12-02-08  
B 78583 \*19

Location	Loc Qty	Loc Code
LG	400	
77574	400	
LG001	237	
65317	1	
68224	2	
68507	11	
71355	2	
72704	2	
72841	11	
73390	8	
73857	21	
73858	53	
73859	4	
73860	4	
76793	118	

D2654-5 Manufactured No Each 0.0000

\*D2654-5\*

Web

78832

\*\*

① NK 12/02/01

D2680-041 Manufactured No Each 140.0000

\*D2680-041\*

Nut Plate

\*\*

① B 12/02/09

Location	Loc Qty	Loc Code
ST013	44	
75479	44	
ST019	96	
76790	96	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

January-10-12 9:28:21 AM

Page 4

Work Order ID: 78451

**\*78451\***

Parent Item: D206-642-341

**\*D206-642-341\***

Parent Item Name: Replacement Skidtube

Start Date: 10/01/2012

Required Date: 23/02/2012

Start Qty: 1.00

Required Qty: 1.00

MS27039C1-08

Purchased

No

Each

766.0000

56

**\*MS27039C1-08\***

**\*\***

SCREW

*BR 12-2-22*

Location

Loc Qty

Loc Code

FP002

1

116022

1

ST293

765

116373

3

118077

150

118159

500

119309

112

*56.*

ALS4-1032-130

Purchased

No

220

Each

1,684.000

54

54

**\*AI S4-1032-130\***

**\*\***

Insert

*BR 12-2-22*

Location

Loc Qty

Loc Code

ST280

1589

119084

1589

ST281

95

119632

95

*54.*

AN960C10L

*\*R*

NAS1149C0332

Purchased

No

220

Each

0.0000

54

54

**\*AN960C10I \***

washer

*120648*

**\*\***

*54. BR 12-2-22*

AN960JD10L

*\*R*

NAS1149D0332J

Purchased

No

220

Each

0.0000

2

2

**\*AN960JD10I \***

Washer

*119042*

**\*\***

*2 BR 12-2-22*

January-10-12 9:28:21 AM

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Page 4

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

Page 5

January-10-12 9:28:21 AM

Work Order ID: 78451

**\*78451\***

Parent Item: D206-642-341

**\*D206-642-341\***

Parent Item Name: Replacement Skidtube

Start Date: 10/01/2012

Required Date: 23/02/2012

Start Qty: 1.00

Required Qty: 1.00

D2646

Manufactured No

220 Each

122.0000 1 1

**\*D2646\***

Aft Cap

\*\*

BR 12-2-22.

Location

Loc Qty

Loc Code

FP002

78018

122

62678

5

68280

5

70945

1

71038

4

71070

2

73294

1

73825

104

1

D2651-1

Manufactured No

220 Each

177.0000 14 14

**\*D2651-1\***

Plug

\*\*

BR 12-2-22

Location

Loc Qty

Loc Code

FP001

72864

177

57869

1

66445

10

69018

2

70839

2

71037

31

73827

131

14.

D2651-3

Manufactured No

220 Each

2,667.000 14 14

**\*D2651-3\***

O-Ring

\*\*

BR 12-2-22.

Location

Loc Qty

Loc Code

FP001

667

61962

12

73828

655

FP-A

2000

78126

2000

14.

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

January-10-12 9:28:21 AM

Page 6

Work Order ID: 78451

\*78451\*

Parent Item: D206-642-341

\*D206-642-341\*

Parent Item Name: Replacement Skidtube

Start Date: 10/01/2012

Required Date: 23/02/2012

Start Qty: 1.00

Required Qty: 1.00

D3535-11

Manufactured No

220

Each

18.0000

1

1

\*D3535-11\*

Wearshoe

\*\*

BR 12-2-22

## Location

## Loc Qty

## Loc Code

FP001

18

70879✓

5

71284

13

D3535-23

Manufactured No

220

Each

34.0000

1

1

\*D3535-23\*

Wearshoe

\*\*

BR 12-2-22

## Location

## Loc Qty

## Loc Code

FP001

34

73314✓

23

74508

11

D3535-35

Manufactured No

220

Each

21.0000

1

1

\*D3535-35\*

Wearshoe

\*\*

BR 12-2-22

## Location

## Loc Qty

## Loc Code

FP001

21

67598

1

70815

1

73311✓

7

74509✓

12

D3536-11

Manufactured No

220

Each

14.0000

1

1

\*D3536-11\*

Gasket

\*\*

BR 12-2-22

## Location

## Loc Qty

## Loc Code

FP002

14

46649

1

46715

4

65574

1

71283✓

8

January-10-12 9:28:21 AM

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Page 6

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



**Picklist Print**

Page 7

January-10-12 9:28:21 AM

Work Order ID: 78451

**\*78451\***

Parent Item: D206-642-341

**\*D206-642-341\***

Parent Item Name: Replacement Skidtube

Start Date: 10/01/2012

Required Date: 23/02/2012

Start Qty: 1.00

Required Qty: 1.00

D3536-23

Manufactured No

220 Each

33.0000

1 1

**\*D3536-23\*****\*\***

Gasket

LocationLoc QtyLoc Code

FP002

33

43406

1

73312 ✓

20

74510

12

D3536-35

Manufactured No

220 Each

32.0000

1 1

**\*D3536-35\*****\*\***

Gasket

LocationLoc QtyLoc Code

FP002

32

73313 ✓

14

74511

18

D3537-1

Manufactured No

220 Each

56.0000

6 6

**\*D3537-1\*****\*\***

Wearpad

LocationLoc QtyLoc Code

FP002

56

69817

5

77036

51

D3537-3

Manufactured No

220 Each

12.0000

1 1

**\*D3537-3\*****\*\***

Wearpad

LocationLoc QtyLoc Code

FP002

12

76986

12

January-10-12 9:28:21 AM

Shop Packet Print

Page 7

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**Picklist Print**

January-10-12 9:28:21 AM

Page 8

Work Order ID: 78451

**\*78451\***

Parent Item: D206-642-341

**\*D206-642-341\***

Parent Item Name: Replacement Skidtube

Start Date: 10/01/2012

Required Date: 23/02/2012

Start Qty: 1.00

Required Qty: 1.00

MS27039-4-06

Purchased

No

220

Each

296.0000

1

1

**\*MS27039-4-06\***

**\*\***

*BK 12-2-22*

Screw

Location

Loc Qty

Loc Code

ST292

296

119075 ✓

296

1

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

QTY -1	QTY -3	QTY -5	QTY -7	PART NUMBER	DESCRIPTION
X				D2650-1	SKIDTUBE ASSEMBLY
	X			D2650-3	SKIDTUBE ASSEMBLY
		X		D2650-5	SKIDTUBE ASSEMBLY
			X	D2650-7	SKIDTUBE ASSEMBLY
1	1	1	1	D2600-1-160	EXTRUSION
1				D2654-1	WEB
	1			D2654-3	WEB
		1		D2654-5	WEB
			1	D2654-7	WEB
1	1	1	1	D2646	AFT CAP
1	1	1	1	D2647	CAP
17	18	19	23	D2649	CROSS BOLT SPACER
16	18	14	22	D2651-1	PLUG
16	18	14	22	D2651-3	O-RING
1	1	1	1	D2680-041	NUT PLATE
2	2			D3286-1	DOUBLER
2	2			D3286-3	STUD
42	44	54	60	ALS7-1032-130	INSERT (or AKS4-1032-130, ALS4-1032-130, ALS7-1032-130)
2	2	2	2	AN960JD10L	WASHER
2	2	2	2	CCR264SS3-3	RIVET
2	2	2	2	CR3212-4-03	RIVET
2	2	2	2	MS27039-1-08	SCREW
1	1	1	1	MS27039-4-06	SCREW
1	1	1	1	AN960JD416	WASHER
52	52			CR3212-4-04	RIVET

F

F

#### NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: -CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
-POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3  
-BLACK ANTI-SKID PAINT AS INDICATED TO 0.5 ABOVE LOCATION RIDGE PER DART QSI 005 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: N/A
- 8) WELD PER DART QSI 004
- 9) DAMAGE TOLERANCE ON FWD BEND:  
THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 5 INCHES ABOVE THE GROUND. IT IS ACCEPTABLE TO POLISH OUT GOUGES UP TO 0.020 DEEP IN THE BENT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.
- 10) BOND WEB INTO OUTER TUBE WITH SIKAFLEX-241/291 ADHESIVE PER DART QSI 015
- 11) INSERT D2651-1 PLUG C/W D2651-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE)
- 12) DRILL Ø0.297 FOR ALS7-1032-130 INSERTS USING TEMPLATE DT8056-1 ON -1 TUBE, DT8056-3 ON -3 TUBE, DT8056-5 ON -5 TUBE, AND DT8056-7 ON -7 TUBE. INSTALL INSERTS AFTER FINISH.
- 13) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

SHOP COPY  
RETURN TO  
ENGINEER  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITH EPN 114  
WORK CENTER  
NO. 78451 M.L.J  
12/01/10

RELEASED  
08-23-17

F	DRAWING UPDATED TO CURRENT STANDARDS. SHT 6 ADDED. ALL SECTION AND DETAIL VIEWS TRANSFERRED TO SHT 6. SHT 1 IN PL PART D2649 QTY UPDATED. SHT 6 SECT C-C GRIND INSTRUCTIONS DELETED FROM NOTE 7 (SEE NCR 239).	AJS	08.08.08
E	REMOVE CBORE, CHG DRILL, ADD CHAMFER	CP	06.03.30
D	REDRAW; INCORP. DE09136/9153/9163 MOD GROUND HANDLING ON D2650-1/-3	CP	04.05.17
C	CHANGE HOLE PATTERN AND FRONT END	DS	97.10.29
B	AS MANUFACTURED CHANGES	DS	97.06.26
A	NEW ISSUE	DS	97.03.25
REV.	DESCRIPTION	BY	DATE
DESIGN	DS	DART AEROSPACE USA, INC	
DRAWN	AJS	PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2650	SHEET 1 OF 6
APPROVED		TITLE	SCALE
DE APPR.		206/407 SKIDTUBE ASSEMBLIES	NTS
DATE	08.08.08	COPYRIGHT © 1997 BY DART AEROSPACE USA, INC THIS DOCUMENT IS UNCLASSIFIED AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

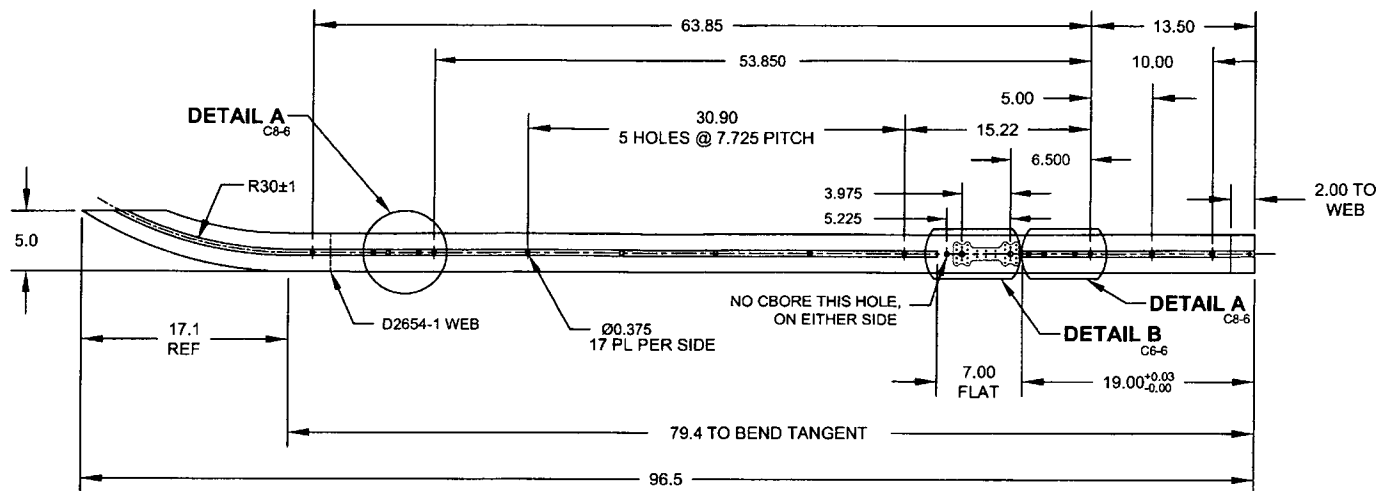
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

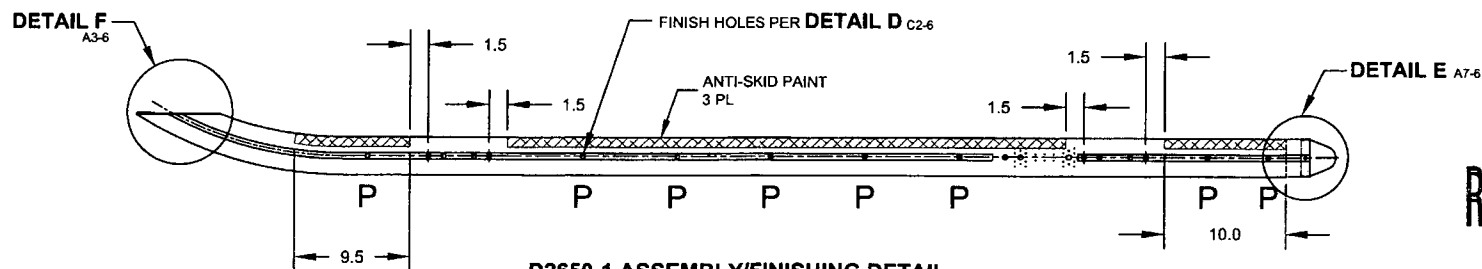
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

78451







**D2650-1 BENDING/DRILLING DETAIL**



**D2650-1 ASSEMBLY/FINISHING DETAIL**

RELEASED  
680922.114

DESIGN	DS	<b>DART AEROSPACE USA, INC</b>	
DRAWN	AJS	PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2650	SHEET 2 OF 6
APPROVED		TITLE	SCALE
DE APPR.		206/407 SKIDTUBE ASSEMBLIES	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



Technical drawing of a C8-6 channel section showing dimensions and details. The drawing includes a top view with dimensions: 68.50, 63.50, 53.500, 15.50, 10.00, 5.00, 30.90, 14.87, 6.500, 3.975, 5.225, 2.00 TO WEB, 7.00 FLAT, 21.00<sup>+0.03</sup>/<sub>-0.00</sub>, 87.0 TO BEND TANGENT, 104.1, 17.1 REF, 5.0, R30±1, D2654-3 WEB, Ø0.375 18 PL PER SIDE, 5 HOLES @ 7.725 PITCH, and 2.00 TO WEB. Details A and B are indicated. A note states: "DO NOT CBORE THIS HOLE, ON EITHER SIDE".

**DETAIL F**  
A3-6

1.5

1.5

FINISH HOLES PER **DETAIL D** C2-6

ANTI-SKID PAINT  
3 PL

1.5

**DETAIL E**  
A7-6

P P P P P P P P

15.5

12.0

RE

RELEASED  
08 07 22 / 10

DESIGN	DS	<b>DART AEROSPACE USA, INC</b>	
DRAWN	AJS	<b>PORT HADLOCK, WA</b>	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2650	SHEET 3 OF 6
APPROVED		TITLE	SCALE
DE APPR.		206/407 SKIDTUBE ASSEMBLIES	NTS
DATE	08.08.08	COPYRIGHT © 1987 BY DART AEROSPACE USA, INC THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT THE WRITTEN PERMISSION FROM DART AEROSPACE USA, INC	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

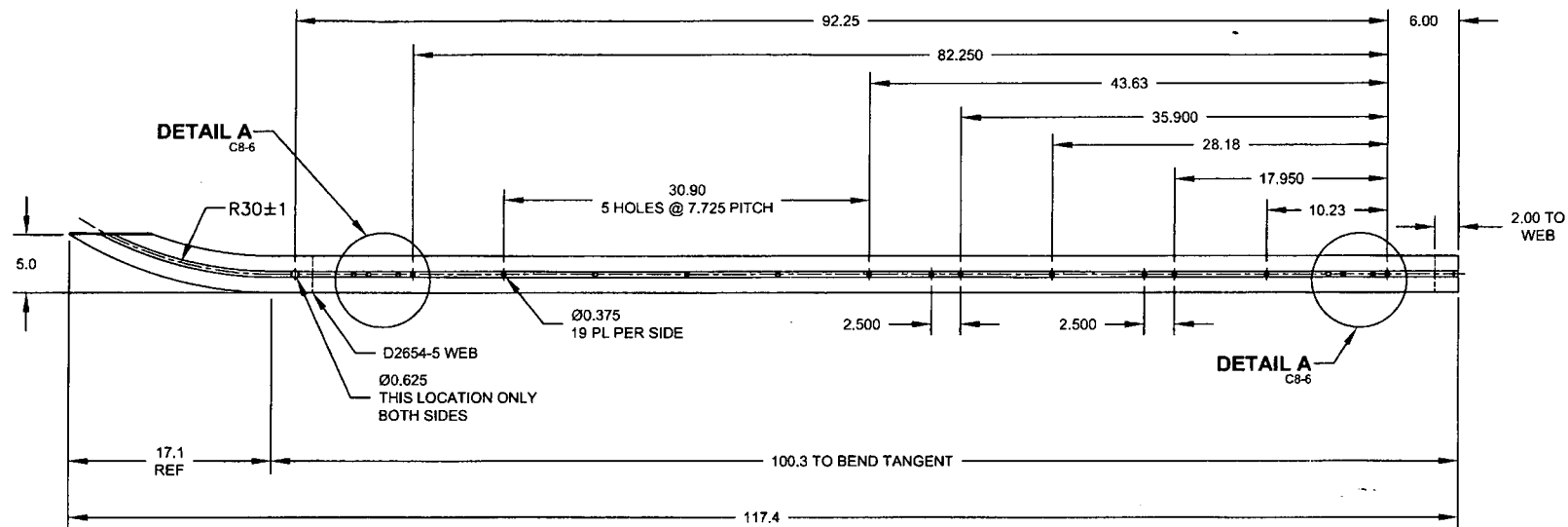
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

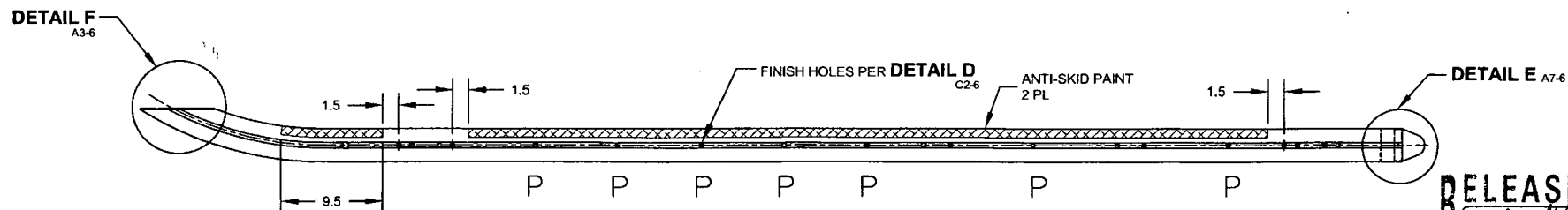
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

7845



**D2650-5 BENDING/DRILLING DETAIL**



**D2650-5 ASSEMBLY/FINISHING DETAIL**

**RELEASED**  
08.09.22/11

DESIGN	DS	<b>DART AEROSPACE USA, INC</b>	
DRAWN	AdS	PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2650	SHEET 4 OF 6
APPROVED		TITLE	SCALE
DE APPR.		206/407 SKIDTUBE ASSEMBLIES	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

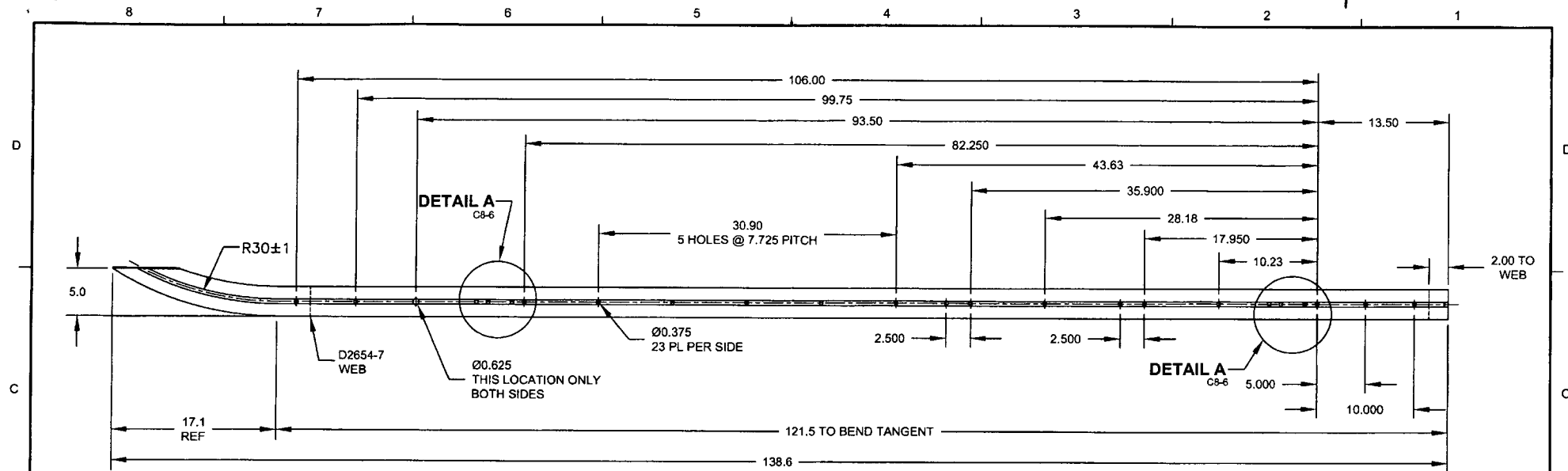
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

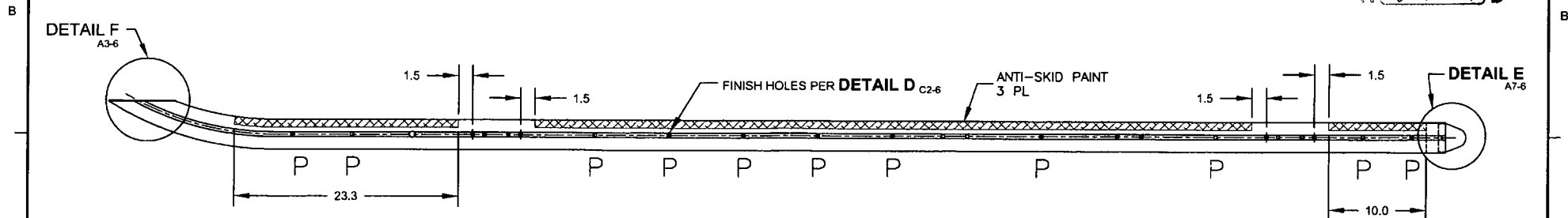
**NOTE:** Date & initial all entries

70451



### D2650-7 BENDING/DRILL DETAIL

RELEASED  
08 07 22



### D2650-7 ASSEMBLY/FINISHING DETAIL

DESIGN	DS	<b>DART AEROSPACE USA, INC</b>	
DRAWN	AJS	PORT HADLOCK, WA	
CHECKED	<i>[Signature]</i>	DRAWING NO.	REV. F
MFG. APPR.	<i>[Signature]</i>	D2650	SHEET 5 OF 6
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	206/407 SKIDTUBE ASSEMBLIES	NTS
DATE 08.08.08		COPYRIGHT © 1997 BY DART AEROSPACE USA, INC <small>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC</small>	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

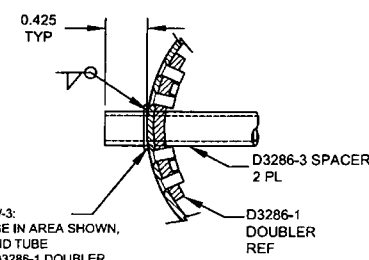
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

7845

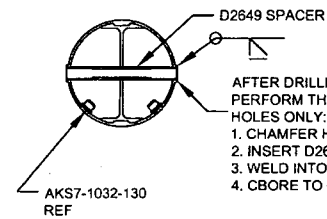
**SECTION C-C** C7-6  
SCALE NONE



- TO INSTALL D3286-1/3:
1. GRIND OFF FLANGE IN AREA SHOWN, FLUSH WITH ROUND TUBE
  2. LOCATE & DRILL D3286-1 DOUBLER USING DT3286-1T1
  3. ENLARGE HOLES IN D3286-1 TO Ø0.500
  4. ENLARGE HOLES IN TUBE TO Ø0.625 AND CHAMFER HOLE 0.030x45°
  5. RIVET D3286-1 TO TUBE
  6. INSERT D3286-3 SPACER
  7. WELD IN PLACE.

△ F

**DETAIL D**  
FOR Ø0.375 HOLES ONLY  
SCALE 3X



- AFTER DRILLING AND BENDING ASSEMBLY PERFORM THE FOLLOWING FOR Ø0.375 HOLES ONLY:
1. CHAMFER HOLE 0.030 X 45°
  2. INSERT D2649 SPACER
  3. WELD INTO PLACE AND GRIND FLUSH
  4. CBORE TO Ø0.313 X 0.75 DP

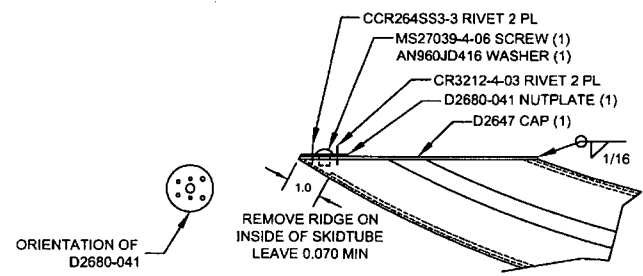
**DETAIL F NOTES:**

1. CUT TUBE LEVEL
2. REMOVE RIDGE ON FWD SIDE
3. LOCATE D2647 (TRIM AS NECESSARY)
4. WELD D2647 IN PLACE PER DART QSI 004
5. GRIND FLUSH
6. RIVET D2680-041 NUT PLATE IN PLACE

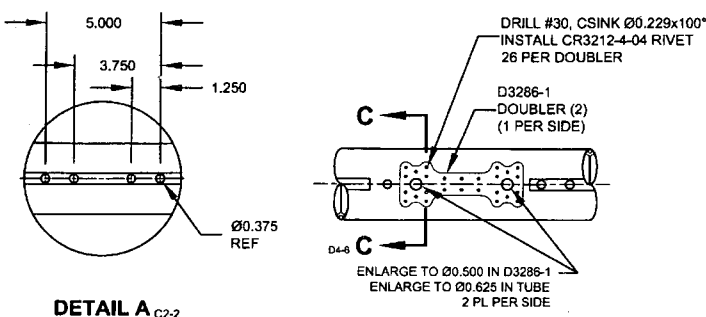
NOTE: MASK THREADS IN D2680-041 PRIOR TO FINISH

**RELEASED**  
08-09-2018

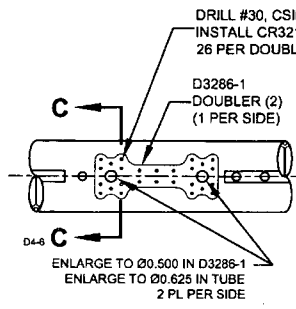
**DETAIL F**  
SCALE NONE



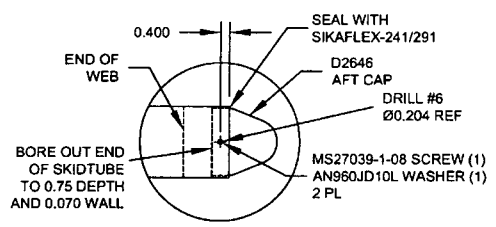
**DETAIL A**  
SCALE 2X







**DETAIL B**  
SCALE 2X



**DETAIL E**  
SCALE 2X



DESIGN	DS	<b>DART AEROSPACE USA, INC</b>	
DRAWN	AJS	PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2650	SHEET 6 OF 6
APPROVED		TITLE	SCALE
DE APPR.		206/407 SKIDTUBE ASSEMBLIES	NTS
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W/O:		WORK ORDER CHANGES					
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Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



NO. 28

AWS D17.1.2001  
QUALIFICATION TEST RECORD

Name: Andrew Elliot  
Job number: 77992  
Part number: 4815-252-15  
Description: SA-240  
Welding Process: Tig[ ] Mig[ ]  
Base material: 304 SS  
Current: AC[ ] DC[ ]

TEST REQUIREMENTS AND RESULTS

Visual: pass[ ] fail[ ]  
Penetration: pass[ ] fail[ ]

UNACCEPTABLE

Cracks: pass[ ] fail[ ]  
Undercut: pass[ ] fail[ ]  
Pin holes: pass[ ] fail[ ]  
Overlap (cold lap): pass[ ] fail[ ]  
Porosity (surface): pass[ ] fail[ ]  
Coloration: pass[ ] fail[ ]

Qualifier Andrew Elliot Date of Test Coupon 12/1/03

Welder Andrew Elliot Date of Test Coupon 12/1/03

The above named individual is qualified in accordance with AWS D17.1.2001 to weld